



PIER Demand Response Research Center

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Demand Response R&D Symposium

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drcc.lbl.gov



Center Overview

Objective

Develop, prioritize, conduct and disseminate multi-institutional research to facilitate Demand Response

Scope

Technologies, policies, programs, strategies and practices, emphasizing a market connection for all sectors (residential, commercial, and industrial)

Stakeholders

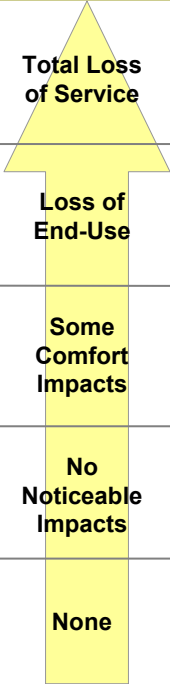

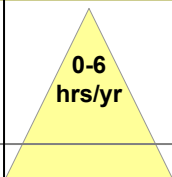


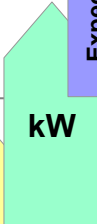

Partners Planning Committee, Annual R&D Plan

- | | |
|---|---|
| <input type="checkbox"/> State Policy Makers | <input type="checkbox"/> Utilities |
| <input type="checkbox"/> Researchers | <input type="checkbox"/> Industry Trade Associations |
| <input type="checkbox"/> Information and Metering System Developers | <input type="checkbox"/> Building Owners / Operators |
| <input type="checkbox"/> Aggregators | <input type="checkbox"/> Building Equipment Manufacturers |
| <input type="checkbox"/> Program Implementers | <input type="checkbox"/> End-Use customers |



Integrating Efficiency, Price-Response and DR for Reliability

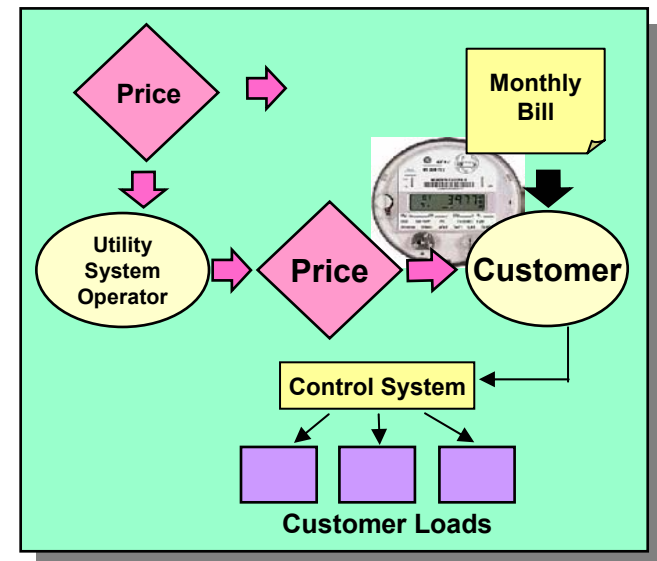


The Customer Perspective			Customer Service Impact	Purpose of DR	Valuing DR (\$)	Advance Notice	Time Perspective		
5	Full Outage			System Protection		None			
4	Involuntary End-Use Curtailment			Grid or System Protection					Seconds or Less
3	Voluntary Partial End-Use Curtailment			Reliability and Economics		Seconds to Hours	20-40 hrs/yr		
2	Shifting, Rescheduling, Demand Limiting			Economics			Hours to Days		40-100 hrs/yr
1	Basic Service			None	None		Annual		years
Envelope & Equipment		Control Systems							
		Interface							
Customer Facility Infrastructure									



Current Center Projects

- ★ **Program and Tariff Analysis: Customer Experience with Dynamic Electricity Pricing**
- ★ **Information Management for Automated Demand Response in Large Facilities**
- ★ **Demand Shifting with Building Thermal Mass**
- ★ **Center R&D Scoping Study**



Dispatchable Price/Rate, Indirect Control



Demand Shifting with Thermal Mass



- ★ **Goal** - understand demand shifting with building mass & develop optimal control
- ★ **Current Work** – large & small commercial building field studies & preliminary simulation study
- ★ **Recent Results** – 2003 Santa Rosa demo shifted afternoon chiller power (2 W/ft^2)
- ★ **R&D Team** – So. Cal. Edison, Purdue, UC Berkeley, LBNL

Concrete Floor

Thermal Capacity
~ 3 Watts-Hours/ft³ - F





Scoping Study: Developing a Multi-Year R&D Plan

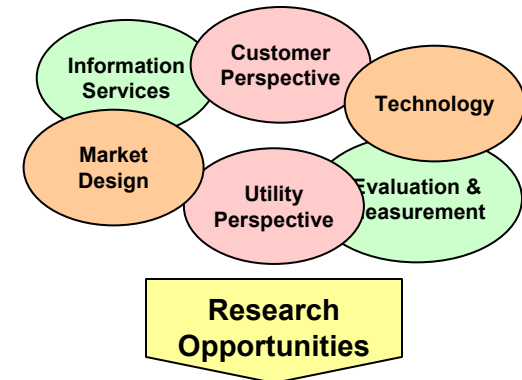
Convene a National Panel of DR Experts

- Roundtable Forum (December 2-3)
- Summarize DR knowledge
- Identify DR research needs
- Identify specific research opportunities

Partners Planning Committee

- Review, classify DR research opportunities
- Define / Prioritize DR projects

National DR Experts



DR Research Center Partner Planning Committee

